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Timing the Second Dose of Measles Vaccine

AK Sharma,
KD Medicare Centre, 100 Feet Road, Delhi 110 093, India.
akgeeta_sharma@yahoo.co.in..

After going through the latest issue of *Indian Pediatrics*, I was wondering whether a single recommendation can hold true to the vast and varied country like India? Do we know the age related magnitude of the problem? On one hand, in a metro like Delhi, where the coverage of the measles vaccination is so good that we hardly see any measals epidemics; there is a possibility that there may be some areas where the Pakistan like situation could be conducive to cause even the under 9 months measles epidemic. Even in the absence of credible reporting, one thing is certain that the disease has shifted the age group from early childhood to the school age group.

Now measles vaccine (a good immunogenic viral vaccine) is given thrice - at 9 and 15monhs (MMR) and after 5 years (2nd MMR); but those, who are not given MMR (obviously underprivilaged and high-risk ones), receive only single dose at 9 months. In the case of non availability of MMR, or while preponing the measals vaccine below 9 months in the epidemic, can the high-risk children receive a dose of measles along with 1st and 2nd booster DPT or at any other age? And if the vaccine is so good, why it is being given thrice? Or, are we revising our opinion about the viral vaccines because the 2nd dose of Chicken pox is also in vogue?

REPLY

We appreciate Dr Sharma's concerns regarding the uneven playing field of measles prevention and control in different States in India. For assured prevention of measles in the individual child, no matter in which State, 2 doses of a measles-containing vaccine is necessary. The Delhi measles epidemio-logy of no more outbreaks but age shifted upwards in sporadic cases - is not confined to Delhi, but occurs in some other States such as Kerala(1), Tamil Nadu etc. Unfortunately, as long as measles virus survives in the community (as evidenced by sporadic cases) there remains the probability that outbreaks will occur. Outbreaks will affect susceptible older children and also susceptible young children including infants below 9 months. The only way to prevent future outbreaks is by not allowing measles virus to continue to circulate – by excellent degree of control.

For control of measles in the community, again 2 doses are needed. Thus, in spite of being a highly immunogenic live virus vaccine, a second dose of measles vaccine is essential to immunize those who had failed to respond to the first dose. At 9 months, up to 15% infants may fail to respond; even at 12 months up to 5% may fail. At 15-18 months also a small proportion may not respond adequately. Once the age

of measles has shifted upwards, we will be able to schedule the first dose at 12 months rather than 9 months, to reduce the frequency of vaccine-failure. However this should come as a recommendation from the national program. When unvaccinated children and those who failed to respond to vaccination accumulate to large numbers, measles will break out. To prevent it, high coverage with first dose and a second opportunity are necessary.

When the first dose is given at 9 months (or later) a second dose may be given in the second year of life, such as at the time of the DPT booster. Delaying the second dose to 5 years is not ideal since some children may remain susceptible up to that time.

Three doses of measles vaccine are not necessary. If a child got measles vaccine at 9 months and one MMR dose in the second year of life, another dose MMR is not necessary for the sake of *measles protection*. However, if better protection from mumps is desired with a second dose, then the second MMR will serve that purpose – not essential, but harmless and useful against mumps. Rubella vaccine's purpose is slightly different from that of measles and mumps components. Individual protection of children from rubella is of not of much value – rubella *per se* being a mild disease, but reduced circulation of rubella virus in the community (to prevent maternal rubella infection leading to congenital rubella syndrome) is the goal of rubella vaccination program.

With these principles, one can tailor-make measles-containing vaccination to fit the individual child's circumstances; IAP guidelines will help. As for national immunization program, the second dose may be scheduled for convenience as routine (in second year of life) or as campaign with a broader age range – the upper age will determine the interval for the next campaign.

T Jacob John and Panna Choudhury,
tjacobjohn@yahoo.co.in.

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Prevalence of Childhood Tuberculosis at Secondary Hospitals in Uttar Pradesh

I read with great interest the recent communication by Vashishtha and John(1). They have documented the annual rate of *Mycobacterium tuberculosis* (Mtb) infection in children attending an outpatient department of a secondary level hospital in Western Uttar Pradesh. The prevalence rate of Mtb infection in different age groups are much higher than community surveys in rural Uttar Pradesh by Indian Council of Medical Research. Although findings from the study do not indicate the exact community prevalence, the implications are that a significant proportion of outpatient workload for practicing pediatricians in Western Uttar Pradesh (UP) would be children with tuberculosis. I have documented the overall prevalence of childhood (1month-18 years) tuberculosis (not infection) in out-patients at Shanti-Mangalick hospital (Agra, UP) using IAP guidelines to be 3.5% (95% CI 2.5% -4.0%)(2, 3). This concurs with the high prevalence rates of infection documented by Vashishtha and John and the natural history of tuberculosis disease in children.

The challenges noted while managing children with tuberculosis as outpatients were difficulties in demonstrating acid-fast bacilli, inability to link the children with the RNTCP program due to guidelines and logistic issues, an extremely high prevalence of extra-pulmonary tuberculosis (~ 50%), long delays in diagnosis considering the duration of symptoms at presentation (median 4.5 months, IQR 1-6.5 months), inability to do contact tracing in all children and follow up and affordability issues.